Applicant: Tsann-Long Su et al. Attorney's Docket No.: 08919-0118001 Academia Sinica Reference: 12A-921219

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## Amendments to the Specification:

## Please replace the paragraph beginning at page 2, line 22, with the following amended paragraph:

One of R<sub>9</sub> and R<sub>10</sub> can be CONH(CH<sub>2</sub>)<sub>m</sub>NR<sup>b</sup>R<sup>c</sup>, L-N(CH<sub>2</sub>CH<sub>2</sub>Cl)<sub>2</sub>, or a DNA minor groove binder, and the other can be C1-C6 alkyl or hydrogen. For example, one of R9 and R10 can be  $CONH(CH_2)_mNR^bR^c$  (e.g.,  $CONH(CH_2)_2N(CH_3)_2$ ), and the other can be  $C_1$ - $C_6$  alkyl (e.g.,  $CH_3$ ) or hydrogen. As another example, one of R<sub>9</sub> and R<sub>10</sub> can be L-N(CH<sub>2</sub>CH<sub>2</sub>Cl)<sub>2</sub> (e.g., one of R<sub>9</sub> and R<sub>10</sub> can be N(CH<sub>2</sub>CH<sub>2</sub>Cl)<sub>2</sub> or CH<sub>2</sub>N(CH<sub>2</sub>CH<sub>2</sub>Cl)<sub>2</sub> or one of R<sub>9</sub> and R<sub>10</sub> can be O(CH<sub>2</sub>)<sub>2</sub>N(CH<sub>2</sub>CH<sub>2</sub>Cl)<sub>2</sub> or O(CH<sub>2</sub>)<sub>4</sub>N(CH<sub>2</sub>CH<sub>2</sub>Cl)<sub>2</sub>), and the other can be C<sub>1</sub>-C<sub>6</sub> alkyl (e.g., CH<sub>3</sub>) or hydrogen. As a further example, one of R<sub>9</sub> and R<sub>10</sub> can be a DNA minor groove binder and the other can be C<sub>1</sub>-C<sub>6</sub> alkyl (e.g., CH<sub>3</sub>) or hydrogen. One of  $R_9$  and  $R_{10}$  can be CONH(CH<sub>2</sub>)<sub>r</sub>-J-W-(CH<sub>2</sub>)<sub>t</sub> $R^e$ , in which r is 1, 2, 3, 4, or 5; t is 1, 2, 3, or 4, 5, or 6; J is -CONH- or -NHCO-; W is:

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s is 0, 1, 2, 3, or 4; each of X and Y is, independently, N or  $CR^f$ ; [[W]]  $\underline{W}$ ' is  $NR^g$ , O, or S;  $R^e$  is  $NR^bR^c$ , NHCHO, or NHC(=NH)NH<sub>2</sub>; each of  $R^b$  and  $R^c$  is, independently, hydrogen,  $C_1$ - $C_6$  alkyl,  $COR^d$ , or  $COOR^d$ ; and each of  $R^f$  and  $R^g$  is, independently, hydrogen or  $C_1$ - $C_6$  alkyl. s can be 0, each of X and Y can be CH, and [[W]]  $\underline{W}$ ' can be NCH<sub>3</sub>. One of  $R_9$  and  $R_{10}$  can be:

in which r and t can both be 3, and  $R^e$  can be  $N(CH_3)_2$ , NHCHO, or  $NHC(=NH)NH_2$ . One of  $R_9$  and  $R_{10}$  can be:

$$\begin{array}{c|c} H & H_2C \xrightarrow{}_t R^e \\ \hline \\ N & C \\ H_2 & C \\ R_2 & C \\ \end{array}$$

in which r and t can both be 3, and  $R^e$  can be  $N(CH_3)_2$ , NHCHO, or  $NHC(=NH)NH_2$ . In still another example,  $R_6$ ,  $R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{10}$ ,  $R_{11}$ ,  $R_{12}$ , and  $R_{13}$  each can be hydrogen.

## Please replace the paragraph beginning at page 10, line 25, with the following amended paragraph:

In general, the DNA minor groove binder can have the formula,  $-\text{CONH}(\text{CH}_2)_r\text{-J-W-}(\text{CH}_2)_tR^e, \text{ in which the amide carbonyl carbon at the left hand side of the formula}$  represents the point of attachment of the DNA minor groove binder to the acridine ring. The spacers  $\text{``(CH}_2)_r\text{''} \text{ and ``(CH}_2)_t\text{''} \text{ can each contain, independently of one another, 1-5 CH}_2 \text{ units (e.g., 1, 2, 3, 4, or 5 CH}_2 \text{ units)} \text{ and 1-6 CH}_2 \text{ units (e.g., 1, 2, 3, 4, 5, or 6 CH}_2 \text{ units)}, \text{ respectively. In certain embodiments,}$  both r and t are 3. The term "J" can either be -CONH- or -NHCO-. The term "W" represents a heteroaryl

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group having either formula (II-A) or (II-B) shown below. W can be a monomeric, dimeric, trimeric, tetrameric, or pentameric entity, i.e., s can be 0, 1, 2, 3, or 4, respectively. Any ring atom capable of being substituted can be the point of attachment for the intervening amide linkages shown in formulas (II-A) and (II-B). Each of the five membered rings can

contain 1, 2, or 3 heteroatoms. In some embodiments, [[W]]  $\underline{W}$ ' can be NR<sup>g</sup>, O, or S; and X and Y can be, independently of one another, N or CR<sup>f</sup>, in which R<sup>f</sup> and R<sup>g</sup> can either be hydrogen or C<sub>1</sub>-C<sub>6</sub> alkyl (e.g., C<sub>1</sub> alkyl, C<sub>2</sub> alkyl, C<sub>3</sub> alkyl, C<sub>4</sub> alkyl, C<sub>5</sub> alkyl, or C<sub>6</sub> alkyl). In some embodiments, [[W]]  $\underline{W}$ ' is NCH<sub>3</sub>; and X and Y can both be CH; or X can be CH and Y can be N; or X can be N and Y can be CH; or X and Y can both be N. R<sup>e</sup> can be NR<sup>b</sup>R<sup>c</sup>, NHCHO, or NHC(=NH)NH<sub>2</sub>. Each of R<sup>b</sup> and R<sup>c</sup> can be, independently of one another, hydrogen, C<sub>1</sub>-C<sub>6</sub> alkyl (e.g., C<sub>1</sub> alkyl, C<sub>2</sub> alkyl, C<sub>3</sub> alkyl, C<sub>4</sub> alkyl, C<sub>5</sub> alkyl, or C<sub>6</sub> alkyl), COR<sup>d</sup>, or COOR<sup>d</sup>, in which R<sup>d</sup> can be C<sub>1</sub>-C<sub>6</sub> alkyl (e.g., C<sub>1</sub> alkyl, C<sub>2</sub> alkyl, C<sub>3</sub> alkyl, C<sub>4</sub> alkyl, C<sub>5</sub> alkyl, or C<sub>6</sub> alkyl), C<sub>6</sub>-C<sub>10</sub> aryl (e.g., phenyl) or C<sub>7</sub>-C<sub>12</sub> aralkyl (e.g., benzyl). In some embodiments, R<sup>e</sup> can be N(CH<sub>3</sub>)<sub>2</sub>, NHCHO, or NHC(=NH)NH<sub>2</sub> (or the acid salts thereof). In some embodiments, the DNA minor groove binder can have the structure represented by formula (III) or (IV).

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$$\begin{array}{c|c} H & H \\ N & \\ N & \\ C & \\ H_2 & \\ N & \\ CH_3 & \\ \end{array}$$
 (IV)